IX.—*Descriptions of new or doubtful Species of the Genus* Ammophila (*Kirby*) *from Algeria.* By F. D. Morice, F.E.S.

The notes following should have formed part of an account which Mr. Saunders and myself are now preparing of Hymenoptera taken in Algeria by the Rev. A. E. Eaton in 1893–97 or by me in 1898. They are published now as the larger work cannot be ready for some time, and I have promised Herr Kohl, who is engaged on a monograph of *Ammophila*, to describe as speedily as possible some of my captures in that genus which he considered to be new.

The species to be dealt with comprise three (possibly four) of the group *Psammophila*, one of *Parapsammophila*, and five of *Ammophila* (sensu stricto).

All are from Biskra. Mr. Eaton took several others of this genus, and I a few, elsewhere; but all the latter appear referable to well-known species.

A few preliminary explanations may here be given as briefly as possible:—

(*a*) In numbering the abdominal segments I have not reckoned the propodeum.

(*b*) The measurements of petioles &c. have been made according to the methods used by Kohl in his monograph of *Sphex*, with the help of a camera lucida. By "length of petiole" I mean, as he does, the *apparent* length of that part of the first ventral plate which is completely visible when the object is viewed directly from above, reckoned *from* (*i. e.* not including) the muscle uniting it with the abdomen *to* the base of the first dorsal plate.

(*c*) The term "tarsal pecten" may be here explained. The female anterior metatarsus swells at its apex outwards into a sort of lobe in which are set three spines, one very stout and considerably bent, the others, lying under it, straighter and more slender. Between these three apical spines and the base of the metatarsus runs an even row of (usually) four other spines, which form the "pecten." The metatarsus bears many other more or less spine-like hairs or bristles both externally and internally, but these form no part of the definite series constituting the "pecten," and one soon learns not to confuse them with it.

(*d*) The following terms may also need some definition, as authors have not always employed them in the same senses. By "pilosity" I mean longish erect hairs, pale or dark, scattered or dense, but never (in clean specimens) matted into a felt-

like mass. By "tomentum," very dense shorter and more decumbent hairs, matted closely together, with a silvery or more rarely a golden glitter, frequently combined with pilosity and lying under it. By "pubescence," a down of still shorter fine and even hairs, never matted, giving a smooth silky or velvety look to the surface which it covers. When the pubescence is quite microscopical and noticeable only by its faint shimmer in certain lights, the surface may be called "pruinose" (frosted). A single row of longish even hairs I call a "fimbria" (fringe).

Group Psammophila, Dhb.

1. *Psammophila masinissa*, sp. n.

Nigra, abdomine atrocyaneo, alis violaceis; tegulis mandibulis pedumque armatura (præter unguiculos rufos) nigris, hirsutie nigra. Vertex punctatus, microscopice rugulosus. Pronotum in medio impressum, mesonotum antice sutura mediana longitudinali instructum, ambo punctata et antico saltem subtiliter transversim rugulosa. Scutellum punctatum, elevatum, subtilissime longitudinaliter striolatum, in medio plus minusve depressum. Propodeum concinne undulatim (in medio fere transversim) striatum. Petiolus brevis, apicem versus dilatatus, antennarum articulis 2+3 vel tarsorum posticorum articulo secundo subæqualis, metatarso postico multo brevior.

Long. 16–17 mill.

Biskra (*Eaton*). Three females (29 iii.–3 iv. '97).

Mr. Eaton took also at Biskra (7 ii. '95) what at present I believe to be only an aberrant form of *masinissa* ♀, but with several conspicuous peculiarities. It is very much larger than the type specimens (long. 24 millim.), the thorax more shining and its sculpture more pronounced (*e. g.* the scutellum is clearly and even strongly bituberculate), the blue tint of the abdomen a shade brighter, &c. The neuration also is curious, the second transverse cubital nervure in both wings being sharply and angularly bent inwards, and the third strongly (but in a curve, not angularly) outwards. This gives a most peculiar appearance to the cubital cells, but one which I suspect to be a result of "neuration gone wrong" (as so often happens in *Ammophila*) rather than a specific character.

At any rate, I am not prepared to found a separate species on this isolated and probably abnormal specimen.

Possibly it may turn out that *masinissa*=*atro-cyanea*, Eversm., but André describes the (♀) propodeum of that species as *not* striated, which it most evidently is in all the specimens before me.

2. *Psammophila micipsa*, sp. n.

Nigra, abdomine haud cyaneo, alis violaceis; unguiculis rufis, hirsutie nigra vel fusca. Sculptura præcedenti fere similis, sed punctis minus crassis, propodei striis magis obliquis, petiolo multo longiore, antennarum articulis 2+3+4, vel metatarso postico, subæquali.
Long. 15–17 mill.

Biskra (*Eaton*). Two females (7–24 iii. '97).

In general appearance like the last, but with much longer petiole and perfectly black abdomen.

3. *Psammophila gulussa*, sp. n.

Bicolor, alarum leniter flavescentium venis aurantiacis; mandibulis, tegulis, armatura pedum, et abdominis segmentis basalibus 3 vel 4 post petiolum (in ♂ obscure) plus minusve rufescentibus. Pecten tarsalis (♀) pallidus. Mas nigro-hirtus, facie et dorso abdominis antice argenteo-tomentosis; ♀ albo-hirta, facie humeris pleuris coxisque tomento argenteo denso ornatis. Mesonotum dense punctulatum, in ♀ leniter transverse rugulosum. Propodeum oblique subtiliter striatum. Petiolus in utroque sexu metatarso postico vel antennarum articulis 2+3+4+5 distincte longior.
Long. 20–22 mill.

Biskra (*Eaton*). One male (30 iii. '97), one female (31 iii. '97).

The petiole in this species is fully as long as in *tydei*. The male and female were taken in the same spot on two following days, and I feel sure they belong to one another.

Group Parapsammophila, Taschenberg.

4. *Parapsammophila monilicornis*, sp. n.

Nigra, alarum leniter flavescentium venis ochraceis, costa subcosta tegulisque in medio brunneis; mandibulis in medio, antennarum, femorum tibiarumque basibus, pedum armatura, abdominisque segmento primo, obscure plus minusve rufescentibus. Caput thoraxque mediocriter pallido-pilosa, facies sub pilis argenteo-pubescens. Clypeus ante apicem gibbose prominens, carina mediana longitudinali instructus. Facies quam in *A. armata*, Illiger, angustior, quam in *A. divite*, Brullé, multo latior. Oculi ad clypeum paullulum convergentes. Petiolus metatarso postico subæqualis, reliquum abdomen pro longitudine latum, piriforme. Pronotum collariforme (*i. e.* pæne usque a basi antice perpendiculariter declive). Mesonotum breve, antice fortiter declive. Scutellum et postscutellum alte convexa. Caput et pronotum punctata; meso-

notum oblique, scutellum et postscutellum longitudinaliter, propodeum fere transversim, striato-rugosa. Antennarum articuli 7 apicales infra valde turgido-dilatati, duo ultimi breves, tertius quarto sesqui longior.

Biskra (*Morice*) Six males (v.–vi. '98).

The unusual structure of the antennæ and broad (almost female-like) abdomen make this, at least in the male, a very distinct species. Unfortunately I did not meet with the other sex.

One of my specimens has the antennæ 14-jointed! (see Ent. Month. Mag., Nov. 1899).

Group Ammophila (sensu stricto).

5. *Ammophila pœcilocnemis*, sp. n.

A. Heydeni, Dhb., simillima, sed in utroque sexu tibiis posticis apicem versus fortius incrassatis perque trientem basalem læte rufis, petiolo toto rufo, abdominis segmentis apicalibus conspicue viridi-cyanescentibus, ♂ genitalium stipitum apicibus certe latioribus, ♀ pectine (ut videtur) minus robusto, facile distinguitur.

Biskra (*Eaton*). Seven specimens (♂, 19, 20 iii., 5 iv. '95; 22, 25 iv. '97: ♀, 29 iii., 3 iv., '97).

The coloration of the tibiæ in this species agrees with that in *iberica* as described by André. The latter, however, is treated by von Dalla Torre as a synonym of *Heydeni*, from which *pœcilocnemis* is certainly structurally distinct. Also, according to André, *iberica* has the petiole black, and of the following segments only the fifth above and the sixth entirely are black, whereas in all the specimens before me the petiole is red, and the fourth, fifth, and sixth segments are of a beautiful metallic blue without a vestige of red.

6. *Ammophila rugicollis*, Lep. (=*rubiginosa*, Lep.) ?

A male taken by Mr. Eaton at Biskra (3 v. '97) seems to agree well with Lepelletier's description of *rugicollis*, and a female from the same place (2 v. '93) with that of *rubiginosa*. The two are, I think, certainly the sexes of one species; and M. Robert du Buysson tells me that *rugicollis* and *rubiginosa* are synonyms, though I see that v. Dalla Torre's catalogue keeps them distinct.

I am in some doubt, however, as to the determination of Mr. Eaton's captures, because M. du Buysson has kindly sent me a male from Tamatave of what he considers to be

rugicollis, which is very like the Algerian male in most respects, but, besides differing from it in a much darker coloration and much more flavescent wings, has also the strigosities of the mesonotum distinctly less coarse and closer, and the first dorsal segment of the abdomen only a little longer than the second, while it is quite twice as long in Mr. Eaton's insect. Whether the two are really specifically distinct, I do not venture to say without more material. At present I confine myself to describing Mr. Eaton's specimens.

Caput nonnihil incrassatum, sublæve, sparsim punctulatum. Facies (♀) juxta oculos margine elevato. Thorax valde rugosus vel strigosus (præcipue in ♂), pro- et mesonotum cum mesosterno transversim, scutellum postscutellumque longitudinaliter, propodeum ac pleuræ oblique (fere transversim).

♀. Rufa sunt—caput cum antennarum dimidio basali mandibulisque præter apices nigros; thorax pedesque, nigro parce (hi parcissime) variati; abdominis segmenta duo basalia (superne plus minusve infuscata), etiam tertii basis obscure, omniumque margines apicales. Cetera nigra vel furva, abdominis dorso nonnihil cyanescente.

♂. Pictura minus læta. Caput thoraxque maximam partem nigra; rufescunt tamen—antennarum scapi infra, mandibulæ ut in ♀, pronotum evidenter, obscure quoque latera mesonoti metapleurarumque apices, tegulæ alarum, ac spiracula propodei. Abdomen pedesque fere ut in ♀ sed nigredine magis extensa, tarsis fuscis. Caput thoraxque præcipue in lateribus mediocriter pallido-pilosa. Facies, tempora, humeri, insertiones alarum, metapleurarum apices, coxæque posticæ, plus minusve albo-tomentosa vel saltem pubescentia. Ceterum corpus solita pruina vel pubescentia ornatum (in ♂ ditius). Petiolus metatarso postico multo longior. Clypeus haud emarginatus. Pronotum antice fortiter truncatum. Alæ leniter flavescentes fere hyalinæ. Pedum armatura minus robusta, pecten tarsalis ♀ brevior (nisi fallor) quam in *A. Heydeni*.

Long. 23–25 mill.

7. *Ammophila lævicollis*, André?

Mr. Eaton has taken one male and one female, and I one male and two females, all at Biskra and all in May, except Mr. Eaton's male (29 iii. '97, "visiting *Antirrhinum ramosissimum*"), which seem to agree pretty closely with André's description except in some very trifling details as to the colour of the abdomen.

I am not quite certain that Mr. Eaton's (March) male, in which the tarsi are nearly all quite red, whereas in all the other specimens they are fuscous, belongs to the same species; but being so early a specimen, it may perhaps be immature. I cannot see that structurally it differs from my own male, though superficially it certainly does so.

The species comes very near *Heydeni*; but, apart from having the posterior femora and tibiæ largely red, the wings are clearer, the strigæ of the mesonotum less strong and tending to become obsolete on the centre of its disk, the labrum—which is usually (perhaps always?) black in *Heydeni*—and fully half the mandibles bright red, the female tarsal pecten pale and thin, and the clypeus not in the least emarginate at the apex centrally. The male genitalia seem to me formed much as in *Heydeni*, certainly not as in *pœcilocnemis* described above. The apex of the abdomen has a decidedly blacker tinge than in the latter species, where it is almost as brightly blue as in *nasuta*.

8. *Ammophila albotomentosa*, sp. n.

Bicolor, capite et thorace nigris, abdomine pedibusque maximam partem pallide rufis. Mandibulæ præter apices nigros, clypei apex, scapus, alarum tegulæ cum venis (basalibus saltem) rufa. Abdomen segmentis duobus basalibus pedumque posticorum basibus anguste nigro-lineatis, apice in ♂ immaculato, in ♀ superno nigro. Caput (præter areolam nudam extra utrumque ocellum posticum bene definitam) thoraxque totus dense argenteo-tomentosa ita ut vix aut sculptura aut integumenti color appareat. Abdomen cum pedibus plus minusve cano-pruinosum, apice mediocriter pallido-piloso. Tempora albo-fimbriata. Alæ fere hyalinæ. Antennæ tenues. Petiolus segmento dorsali primo circiter quinta parte longior. Clypei apex nonnihil emarginatus.

Long. circ. 20 mill.

The male and female described above have every appearance of belonging to the same species, a very beautiful one, and quite distinct from anything known to me in nature or from descriptions. My specimen was taken at the foot of the "Montagne de sable," Mr. Eaton's "on the sandhill nearest the baths and tramway at Hammam-es-Salahin," *i. e.* practically on the same ground.

The silvery clothing of the body is very thick and conspicuous, much more so than in *Heydeni* &c. It is interrupted in both sexes on the vertex by an exactly similar naked space adjacent on each side to the posterior pair of ocelli, so definite and symmetrical that I think it is probably a constant character. As compared with *Heydeni* the present species seems to be smaller and more slender, with a slightly longer petiole, thinner antennæ, and clearer wings. The prothorax is of the usual shape; otherwise the species somewhat resembles that next following.

Biskra. One male (31 v. '98, *Morice*), one female (26 iv. '97, *Eaton*).

9. *Ammophila producticollis*, sp. n.

Bicolor, capite et thorace nigris; abdomine rufo, basi haud nigro-lineata, segmentis vero 2 vel 3 apicalibus infuscatis. Antennarum articulus 1 (totus) et 2 (partim), mandibulæ præter apices nigros, labrum clypeique margo latus, alarum hyalinarum tegulæ cum stigmate et magna parte nervorum pallide aurantiaco-rufa. Pedes rufi, posticorum basibus superne nonnihil infuscatis. Caput thoraxque densissime splendidequo argenteo-pubescentia vel tomentosa; temporum prosterni femorumque anticorum (♀) fimbriæ longæ et æquabiles.

Pronotum longissimum, evidenter haud latius quam longius. ♂. Pro- et mesonotum antice transversim, scutellum longitudinaliter, propodeum oblique (fere longitudinaliter) strigosum. Mesonotum antice lineis 3 impressis longis vel suturis divisum. ♀ strigis (quantum video) nullis, sed mesonoto ut in mare lineis impressis diviso atque etiam circa has ita depresso ut pæne trisulcatum vel bicarinatum videatur. Clypeus apice in medio exciso. Long. 17 mill.

Biskra (*Eaton*). Male, 5 v. '97; female, 16 v. '94.

The two sexes are very similar except in the sculpture of the thorax; this, as stated above, differs widely, and it is not without some hesitation that I put the two together. They were taken, however, in exactly the same locality (near the Fontaine Chaude) and in the same month (May).

The male cannot be *dolichodera*, Kohl, since its pronotum is very strongly strigose; while of *dolichodera* the author expressly says "Kragenwulst ohne Querrunzeln, glatt." Nor can the female be his *longicollis*, which has the same part "wie das Dorsulum mit derben Querriefen besetzt"; while in *producticollis* ♀ both pronotum and dorsulum are apparently quite smooth. It remains as just a possibility that *producticollis* ♂ is the unknown male of *longicollis*, and *producticollis* ♀ the unknown female of *dolichodera*; but on the whole I think this so unlikely that it will be safer to treat the Algerian species as new.

Both this and the last species occur among the glittering sands of the hottest Sahara, and have that peculiar and beautiful silvery clothing which characterizes many of the specially desert insects, and is no doubt "protective."